

## Circles Without Metallic Contact 299

circuit, without any contact of metals (615, etc.). It is further shown that when a pair of zinc and platinum plates were excited at one end of the dilute nitro-sulphuric acid (615) or solution of potash (619), or even in some cases a solution of cornirion salt (620), decompositions might be produced at the other end, of solutions of iodide of potassium (635), protochloride of tin (636), sulphate of soda, muriatic acid, and nitrate of silver (641); or of the following bodies in a state of fusion; nitre, chlorides of silver and lead, and iodide of lead (637, 641); no metallic contact being allowed in any of the experiments.

1006. I will proceed to mention new cases; and first, those already referred to, where the action of a little dilute acid produced a current passing through the solution of the sulphuret of potassium (819); or green nitrous acid (832), or the solution of potassa (842); for here no metallic contact was allowed, and chemical action was the evident and only cause of the currents produced.

1007. On the following page is a table of cases of similar excitement and voltaic action, produced by chemical action without metallic contact. Each horizontal line contains the four substances forming a circuit, and they are so arranged as to give the direction of the current, which was in all cases from left to right through the bodies as they now stand. All the combinations set down were able to effect decomposition and they are but a few of those which occurred in the course of the investigation.

*tooS.—See next page.*

1009. It appears to me probable that any one of the very numerous combinations which can be made out of the following table, by taking one substance from each column and arranging them in the order in which the columns stand, would produce a current without metallic contact, and that some of these currents would be very powerful.

um		Dilute nitric acid
Gold	^ 55 g	Dilute
Platin	sulphuric acid	
um		Muriatic acid
Palladi		Solution of
ym		vegetable acids
Silver		Iodide of
Nickel		potassium
Coppe		Iodide of zinc
r		Solution of salt

Many metallic  
solutions